

WHAT IS CLAIMED IS:

1. A method for generating a combined signal in a mobile terminal equipped with a camera that captures image signals, comprising the steps of:

(a) coding a captured image signal into a still picture signal based upon a frame size;

(b) coding a received audio signal;

(c) inserting an image header containing image pattern information and frame size information into the still picture signal based upon the frame size;

(d) combining the still picture signal based upon the frame size into which the image header is inserted, with the coded audio signal;

(e) combining consecutive still picture signals based upon the frame size with corresponding audio signals while the steps (a) to (d) are repeated; and

(f) when a recording operation is completed, storing a combined signal representative of a result of the combining in a moving picture file.

2. The method as set forth in claim 1, wherein the coded image signals are Joint Photographic Expert Group (JPEG) coded image signals.

3. The method as set forth in claim 1, further comprising the step of:

(g) performing a guiding operation so that a name of the moving picture file, and place and time information of image capture associated with the moving picture file can be input when the recording operation is completed, and registering input information along with the moving picture file.

4. A method for generating a combined signal in a mobile terminal equipped with a camera that picks up image signals, comprising the steps of:

(a) capturing and storing moving picture signals; and

(b) generating a combined signal,

wherein the step (a) comprises the steps of:

(a-1) coding an image signal captured by the camera into a still picture signal based upon a frame size during a set time by means of an image codec;

(a-2) storing the still picture signal based upon the frame size as the coded image signal;

(a-3) coding all image signals and storing all still picture signals based upon the

frame size while the steps (a-1) and (a-2) are repeated; and

(a-4) carrying out a guiding operation so that a file name is input when a recording operation is completed while the still picture signals are stored, the still picture signals being stored in a moving picture file when the file name is input, and

5 wherein the step (b) comprises the steps of:

(b-1) accessing and reproducing the stored moving picture signals based upon the frame size and coding an audio signal received at a frame interval;

(b-2) inserting an image header containing image pattern information and frame size information into each coded image signal at a boundary of a frame;

10 (b-3) combining each coded image signal into which the image header is inserted, with the coded audio signal;

(b-4) storing a result of the combining in a memory;

(b-5) combining still picture signals based upon the frame size with audio signals and storing the combining signal representative of a result of the combining while the steps (b-

15 1) and (b-4) are repeated; and

(b-6) carrying out a guiding operation so that a file name is input when a recording operation is completed while the combined signal are stored, the combined signal being stored in a moving picture file when the file name is input.

20 5. An apparatus for generating a combined signal in a mobile terminal, comprising:
a camera module for capturing image signals;

an image processor equipped with an image codec that codes the captured image signals based upon a frame size, the image processor processing moving picture signals generated from the camera module according to a display screen based upon the frame size;

a display unit for displaying the image signals processed by the image processor;

25 a data processor equipped with an audio codec that codes received audio signals, the data processor processing data;

a buffer unit comprising an image buffer for buffering the image signals based upon the frame size coded by the image codec and audio buffers for buffering the audio signals coded by the audio codec;

30 a header generator for inserting an image header containing image pattern information and frame size information into each coded image signal when the image signals based upon the frame size are output from the image buffer and outputting each coded image signal into which the image header is inserted;

a combiner for combining an output of the header generator and an output of the

audio buffer and outputting a result of the combining; and
a memory for storing an output of the combiner as a combined signal.

6. The apparatus as set forth in claim 5, wherein the audio buffers provided in the buffer unit comprise first and second audio buffers, and

5 wherein the apparatus further comprises:
an audio input switch connected between the audio codec and the first and second audio buffers; and

an audio output switch connected between the first and second audio buffers and the combiner,

10 wherein switching operations of the audio input and output switches are controlled by an output of the image buffer.

7. A method for reproducing a combined signal in a mobile terminal equipped with a camera, an image codec and a memory for storing the combining signal in which frame image signals are combined with audio signals, comprising the steps of:

15 (a) when a combined signal playback mode is carried out, displaying a combined signal menu stored in the memory;

(b) when a displayed combined signal containing moving picture mail is selected, accessing the selected combined signal containing the moving picture mail in units of frames;

20 (c) analyzing at least one image header from the combined signal accessed in the units of frames and analyzing a moving picture signal and its size; and

(d) separating the image signals from the combined signal according to a result of the analysis, applying the image signals to the image codec, applying the audio signals to an audio codec, and reproducing the image signals and the audio signals contained in the
25 combined signal.

8. An apparatus for reproducing a combined signal in a mobile terminal, comprising:

a memory for storing a combined signal in which image headers, image signals and audio signals are combined;

30 a header analyzer for analyzing the image headers and generating a control signal for separating the image and audio signals;

a buffer unit comprising an image buffer for buffering the image signals based

upon a frame size that are output from the memory and audio buffers for buffering the audio signals coded by an audio codec, according to the control of the header analyzer;

an image processor comprising an image codec for decoding the image signals output from the buffer unit, the image processor processing the decoded image signals according to a display screen based upon the frame size;

a display unit for displaying the image signals processed by the image processor; and

a data processor comprising the audio codec for decoding the audio signals output from the buffer unit, the data processor reproducing the decoded audio signals.

10 9. A method for transmitting a combined signal in a mobile terminal equipped with a camera and an image codec, comprising the steps of:

(a) when a combined signal transmission mode is carried out, displaying a combined signal menu stored in a memory;

15 (b) when a displayed combined signal containing moving picture mail is selected, accessing the selected combined signal containing the moving picture mail in units of frames;

(c) dividing the combined signal accessed in the units of frames on the basis of a packet size, coupling packet headers to packets, assembling image packets and audio packets subsequent to the image packets; and

20 (d) sequentially transmitting the assembled packets.

10. A method for transmitting a combined signal in a mobile terminal equipped with a camera and an image codec, comprising the steps of:

(a) coding moving picture signals into still pictures based upon a frame size by means of the image codec;

25 (b) coding received audio signals;

(c) inserting an image header containing image pattern information and frame size information into each coded image signal;

(d) combining coded image signals into which image headers are inserted, with the coded audio signals and generating a combined signal;

30 (e) dividing the combined signal accessed in the units of frames on the basis of a packet size, coupling packet headers to packets, and assembling image packets and audio packets subsequent to the image packets; and

(f) sequentially transmitting the assembled packets.

11. An apparatus for generating a combined signal in a mobile terminal, comprising:

a camera module for capturing image signals;

5 an image processor equipped with an image codec that codes the captured image signals based upon a frame size, the image processor processing moving picture signals generated from the camera module according to a display screen based upon the frame size;

a display unit for displaying the image signals processed by the image processor;

a data processor equipped with an audio codec that codes received audio signals, the data processor processing data;

10 a buffer unit comprising an image buffer for buffering the image signals based upon the frame size coded by the image codec and audio buffers for buffering the audio signals coded by the audio codec;

a header generator for inserting an image header containing image pattern information and frame size information into each coded image signal when the coded image signals based upon the frame size are output from the image buffer and outputting each coded image signal into which the image header is inserted;

15 a combiner for combining an output of the header generator and an output of the audio buffer and outputting a result of the combining;

a memory for storing an output of the combiner as a combined signal; and

20 a packet generator for dividing the combined signal accessed in units of frames on the basis of a packet size, coupling packet headers to packets, assembling image packets and audio packets subsequent to the image packets, and sequentially transmitting the assembled packets.

12. A method for receiving combined packet data in which frame image signals are combined with audio signals in a mobile terminal equipped with a camera and an image codec, comprising the steps of:

(a) analyzing headers of sequentially received audio packets and disassembling image packets and audio packets according to a result of the analysis;

30 (b) combining disassembled image and audio data and storing a result of the combining representative of a combined signal in a memory;

(c) analyzing image headers from the combined signal and analyzing moving picture signals and their sizes; and

(d) separating the image signals from the combined signal according to a result of

the analysis, applying the separated image signals to the image codec, applying the audio signals to an audio codec, and reproducing the image and audio signals contained in the combined signal.

13. An apparatus for reproducing a combined signal in a mobile terminal,
5 comprising:

a packet disassembler for analyzing headers of sequentially received audio packets, disassembling image packets and audio packets according to a result of the analysis, and combining disassembled image and audio data;

10 a memory for storing a combined signal in which image headers, image signals and audio signals are combined in units of frames;

a header analyzer for analyzing the image headers from the combined signal and generating a control signal for separating the image signals and the audio signals;

15 a buffer unit comprising an image buffer for buffering the image signals based upon a frame size that are output from the memory and audio buffers for buffering the audio signals coded by an audio codec, according to the control of the header analyzer;

an image processor equipped with an image codec for decoding the image signals output from the buffer unit, the image processor processing the decoded image signals according to a display screen based upon the frame size;

20 a display unit for displaying the image signals processed by the image processor;
and

a data processor equipped with the audio codec for decoding the audio signals output from the buffer unit, the data processor reproducing the decoded audio signals.

14. A method for processing image signals in a mobile terminal equipped with a camera and an image codec, comprising the steps:

25 (a) displaying image signals received from the camera in a capture mode, coding the displayed image signals into still pictures in a photo capture mode, and storing the still pictures in a memory;

30 (b) coding the captured image signals into image data based upon a frame size in a combined signal storing mode, coding audio signals according to the image data, adding image headers to the image data, combining the image data and audio data, and storing combined data in the memory;

(c) displaying a plurality of combined data units stored in the memory in a combined signal playback mode, accessing selected combined data, separating the image

and audio data by means of the image headers, and decoding and reproducing the image and audio data;

(d) displaying the plurality of combined data units stored in the memory in a combined signal transmission mode, accessing selected combined data and assembling
5 transmission packets based upon the selected combined data, and transmitting the assembled transmission packets; and

(e) disassembling received packet data in a combined signal reception mode, combining image and audio data and storing a result of the combining in the memory.

10 15. A method for generating a combined signal in a mobile terminal equipped with a camera and an image codec, comprising the steps of:

(a) coding image signals captured by the camera into still pictures based upon a frame size by means of the image codec, repeating an operation for inserting an image header containing image pattern information and frame size information into each coded image signal, and generating moving picture signals;

15 (b) after obtaining the moving picture signals, generating at least one text signal;
(c) combining the obtained moving picture signals with the text signal; and
(d) storing a combined signal representative of a result of the combining in a memory.

20 16. The method as set forth in claim 15, wherein the step (b) comprises the steps of:

(b-1) deciding maximum length of displayable text according to a playback time required for reproducing the obtained moving picture signals and displaying the reproduced moving picture signals;

25 (b-2) generating a text header containing information indicating a size of the received text signal and a text pattern signal; and

(b-3) inserting the text header into the text signal and generating the text signal having the inserted text header.

30 17. The method as set forth in claim 16, wherein the step (b-1) comprises the steps of:

allowing a text signal generator to determine the playback time required for reproducing the obtained moving picture signals; and

deciding the maximum length of displayable text according to the playback time

and a display type designated by a user, and

wherein the step (b-2) comprises the step of:

generating the text header containing the information indicating the size of the received text signal and information of the display type.

5 18. The method as set forth in claim 15, wherein the step (a) comprises the steps of:

(a-1) compressing and coding the image signals based upon the frame size;

(a-2) generating the image header containing information indicating a size of each compressed and coded image signal and an image pattern signal;

10 (a-3) inserting the image header into each compressed and coded image signal and generating a still picture signal based upon the frame size; and

(a-4) repeating an operation for generating the still picture signal and generating the moving picture signals.

15 19. The method as set forth in claim 18, wherein the compressed and coded image signals are Joint Photographic Expert Group (JPEG) coded image signals.

20 20. The method as set forth in claim 15, wherein the step (d) comprises the step of:
setting a combined signal menu to register a name of the combined signal and a place and time of image capture associated with the combined signal.

25 21. A method for generating a combined signal in a mobile terminal equipped with a camera and an image codec, comprising the steps of:

(a) coding image signals captured by the camera into still pictures based upon a frame size by means of the image codec, repeating an operation for inserting an image header containing image pattern information and frame size information into each coded image signal, and generating still picture signals based upon the frame size;

30 (b) generating audio signals according to the still picture signals;

(c) generating moving picture signals in which the still picture signals are combined with the audio signals;

(d) after obtaining the moving picture signals, generating a text signal;

(e) combining the moving picture signals with the text signal; and

35 (f) storing a combined signal representative of a result of the combining in a memory.

22. An apparatus for generating a combined signal in a mobile terminal, comprising:

a camera module for capturing image signals;

an image processor equipped with an image codec for coding the captured image signals on the basis of a frame size, the image processor processing moving picture signals generated from the camera module according to a display screen based upon the frame size;

a display unit for displaying the image signals processed by the image processor;

an image header generator for inserting an image header containing image pattern information and frame size information into each image signal coded by the image codec and outputting each coded image signal into which the image header is inserted;

a text signal generator for generating a text signal;

a text header generator for generating a text header containing pattern information and text length information associated with the text signal;

a combiner for combining the moving picture signals with the text signal; and

a memory for storing a combined signal representative of an output of the combiner.

23. The apparatus as set forth in claim 22, wherein the text signal generator confirms a playback time required for reproducing the moving picture signals, decides the maximum length of displayable text according to the playback time and a display type designated by a user, and outputs an output of the text signal generator to the display unit.

24. An apparatus for generating a combined signal in a mobile terminal, comprising:

a camera module for capturing image signals;

an image processor equipped with an image codec that codes the captured image signals based upon a frame size, the image processor processing moving picture signals generated from the camera module according to a display screen based upon the frame size;

a display unit for displaying the image signals;

an audio codec for coding received audio signals;

an image codec for coding the captured image signals based upon the frame size;

an image header generator for inserting an image header containing image pattern information and frame size information into each image signal coded by the image codec and outputting each coded image signal into which the image header is inserted;

a first combiner for interlacing an output of the image header generator with an output of the audio codec to generate a first combined signal;
a text signal generator for generating a text signal;
a text header generator for generating a text header containing pattern information
5 and text length information associated with the text signal;
a second combiner for combining the first combined signal with an output of the text header generator; and
a memory for storing an output of the second combiner representative of a combined signal.

10 25. A method for reproducing moving picture signals contained in a combined signal in a mobile terminal equipped with a camera, an image codec and a memory for storing combined signals in which frame image signals are combined with text signals, comprising the steps of:

(a) displaying the combined signals stored in the memory in a combined signal
15 playback mode;

(b) when a displayed combined signal is selected, analyzing a text header from the selected combined signal and determining a display type and text length; and

(c) accessing and reproducing the combined signal in units of frames after determining the display type, a text signal being reproduced according to the display type
20 in a state where the moving picture signals are reproduced.

26. The method as set forth in claim 25, wherein a process for displaying the text signal comprises the steps of:

when the display type of text is a top display type, displaying the text signal before the moving picture signals are reproduced;

25 when the display type of text is a bottom display type, displaying the text signal after the moving picture signals are completely reproduced;

when the display type of text is a slide display type, sliding and displaying the text signal at a specific area of a display unit while the moving picture signals are reproduced; and

30 when the display type of text is a pile-up display type, displaying the text signal of a set size at a specific area of the display unit during a set time while the moving picture signals are reproduced.

27. An apparatus for reproducing a combined signal in a mobile terminal, comprising:

a memory for storing a combined signal in which a text header, a text signal, a plurality of image headers containing frame size information and still picture signals are combined;

a header analyzer for analyzing the text header to determine a size of the text signal, analyzing an image header of each image signal to determine a size of each image signal, and generating a control signal for separating the text signal and image signals;

a buffer unit for separating the text signal and the image signals output from the memory according to the control of the header analyzer, storing the text signal in the text buffer and storing the image signals in the image buffer;

an image processor equipped with an image codec that decodes the image signals output from the buffer unit, the image processor processing the decoded image signals according to a display screen based upon a frame size;

a controller for processing the text signal according to display type information contained in the text header; and

a display unit for displaying the image signals processed by the controller and the image processor.

28. The apparatus as set forth in claim 27, wherein the controller enables the text signal to be displayed before the moving picture signals are reproduced when a text display type is a top display type;

the controller enables the text signal to be displayed after the moving picture signals are completely reproduced when the text display type is a bottom display type;

the controller enables the text signal to be slid and displayed at a specific area of the display unit while the moving picture signals are reproduced when the text display type is a slide display type; and

the controller enables the text signal of set length to be displayed at a specific area of the display unit during a set time while the moving picture signals are reproduced when the text display type is a pile-up display type.

29. A method for generating moving picture signals in a mobile terminal equipped with a camera and a still-picture or image codec, comprising the steps of:

(a) coding an image signal captured by the camera into a still picture signal based upon a frame size at a set time by means of the image codec;

(b) storing the still picture signal based upon the frame size in a memory;
(c) coding all image signals and storing all still picture signals based upon the frame size while the steps (a) and (b) are repeated; and

5 (d) carrying out a guiding operation so that a file name is input when a recording operation is completed while the still picture signals are stored, the still picture signals being stored in a moving picture file when the file name is input.